

AMENDMENTS TO THE CLAIMS

Please amend the claims as set forth below in marked-up form. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A vascular closure assembly, comprising:

an anchor;

a collagen;

a suture coupled to the anchor and extending through the collagen;

~~a housing;~~

a suture locking mechanism ~~residing in the~~ comprising a housing, ~~the suture locking mechanism including a wedge-shaped portion, wherein the wedge-shaped portion of the locking mechanism includes a planar surface that is arranged to engage a planar inner surface of the housing and at least first and second locking posts extending from the housing;~~

the suture locking mechanism ~~comprising being rotatable between~~ a non-locked position and a locked position;

~~the vascular closure assembly being adapted so that the suture can pass through the housing in a space defined at least in part between the planar inner surface of the housing and the planar surface of the wedge shaped portion of the suture locking mechanism;~~

wherein the suture would engage the suture locking mechanism such that the suture is capable of movement when the suture locking mechanism is in the non-locked position and the suture at least partially wraps around the first and second locking posts and is relatively incapable of movement when the suture locking mechanism is in the locked position.

2. (Canceled)

3. (Previously Presented) The assembly according to claim 2, wherein the suture locking mechanism comprises a suture channel sized for the suture to pass through a portion of the locking mechanism.

4-5. (Canceled)

6. (Currently Amended) The assembly according to claim 1, wherein ~~the housing includes a distal open end, and the locking mechanism is movable within the housing in a direction at least partially toward the distal open end when moving from the non-locked position to the locked position~~ the housing includes a wedge-shaped portion.

7. (Currently Amended) The assembly according to claim [[1]] 6, wherein the wedge shaped portion includes an acute angled portion.

8. (Currently Amended) The assembly according to claim [[1]] 6, wherein the wedge shaped portion includes an obtuse angled portion

9. (Currently Amended) The assembly according to claim [[2]] 1, wherein the ~~sliding~~ rotating movement is caused by expansion of the collagen.

10. (Currently Amended) The assembly according to claim 1, wherein the suture locking mechanism comprises at least one channel ~~through the housing~~ defined between the first and second locking posts.

11. (Original) The assembly according to claim 10, wherein
the at least one channel is arranged such that it provides a substantially non-tortuous suture path when the suture locking mechanism is in the non-locked position; and
the at least one channel is arranged such that it provides a substantially tortuous suture path when the suture locking mechanism is in the locked position.

12. (Original) The assembly according to claim 11, wherein the non-tortuous path is substantially parallel to the suture and the tortuous path has at least a portion that is substantially non-parallel to the suture.

13. (Original) The assembly according to claim 10, wherein the channel is substantially straight.

14. (Original) The assembly according to claim 10, wherein the channel has at least one bend.

15. (Original) The assembly according to claim 10, wherein the channel has a surface comprising at least one of a textured surface, a ribbed surface, a grooved surface, and a notched surface to increase the frictional resistance.

16. (Previously Presented) The assembly according to claim 1, wherein locking mechanism is triangular shaped.

17. (Currently Amended) The assembly according to claim 1, wherein the locking member includes at least three exterior surfaces, ~~the locking member being positioned in the housing so that the suture can engage at least two of the exterior surfaces.~~

18-20. (Canceled)

21. (Currently Amended) A vascular closure device, comprising:

an anchor;

a collagen;

a locking device; and

a suture coupled to the anchor and extending through the collagen and the locking device, wherein the locking device comprises:

a housing; and

~~at least one wedge shaped locking element positioned in the housing, at least two locking posts extending from the housing;~~

~~wherein the at least one locking element has locking device being rotatable between a first orientation and a second orientation, wherein the wedge shaped portion of the locking mechanism includes a planar surface that is arranged to engage a planar inner surface of the housing;~~

~~the first orientation providing the suture with a relatively non-tortuous path defined at least in part between the planar inner surface of the housing and the planar surface of the locking element for the suture through the locking device, and~~

~~the second orientation providing the suture with a relatively tortuous path defined at least in part between the planar inner surface of the housing and the planar surface of the locking element the at least two locking posts.~~

22. (Currently Amended) The closure device according to claim 21, wherein the at least one locking element locking device comprises a channel configured for passage of the suture.

23. (Currently Amended) The closure device according to claim 21, wherein the at least one locking element locking device includes an obtuse angled portion.

24. (Currently Amended) The closure device according to claim 21, wherein the at least one locking element locking device includes at least one of a textured surface, a ribbed surface, a grooved surface, a notched surface, and a channeled surface to increase the frictional resistance.

25. (Currently Amended) The closure device according to claim 21, wherein the at least one locking element locking device comprises an acute angled portion.

26. (Previously Presented) The closure device according to claim 21, wherein the first orientation provides a non-tortuous path substantially parallel to the suture path and the second orientation provides a tortuous path having at least a portion that is substantially non-parallel to the suture path.

27. (Previously Presented) The closure device according to claim 22, wherein the channel is substantially straight.

28. (Previously Presented) The closure device according to claim 22, wherein the channel includes at least one curve.

29. (Previously Presented) The closure device according to claim 22, wherein the channel includes a surface comprising at least one of a textured surface, a ribbed surface, a grooved surface, and a notched surface to increase the frictional resistance.

30-32. (Canceled)

33. (Currently Amended) A vascular closure device, comprising:

an anchor;

a collagen;

a suture; and

a suture locking assembly, the suture locking assembly including a housing and ~~a wedge shaped locking element positioned in~~ at least two locking posts extending from the housing, wherein the wedge shaped portion of the locking mechanism includes a ~~planar surface that is arranged to engage a planar inner surface of the housing;~~

wherein the suture is coupled to the anchor and extends through the collagen and the suture locking assembly in a space defined at least in part between the ~~planar inner surface of the housing and the planar surface of the locking element~~ the at least two locking posts, the suture locking assembly being rotatable between unlocked and locked positions.

34. (Currently Amended) The vascular closure device according to claim 33 wherein ~~locking element has at least a first orientation and a second orientation, such that in the first orientation the suture in the unlocked position a pathway for the suture is relatively non-tortuous and in the second orientation the suture locked position the pathway for the suture is relatively tortuous.~~

35. (Currently Amended) The vascular closure device according to claim 33, wherein the locking assembly comprises a channel defined between the ~~locking element and the housing~~ at least two locking posts, the channel having a first orientation and a second orientation, such that in the first orientation the suture pathway is relatively non-tortuous and in the second orientation the suture pathway is relatively tortuous.

36. (Currently Amended) The vascular closure device according to claim 35, wherein the tortuous suture pathway is formed by ~~a narrowing of the channel~~ wrapping the suture around at least a portion of each of the at least two locking posts.

37. (Canceled)

38. (Currently Amended) A vascular closure assembly, comprising:

an anchor;

a collagen;

a suture coupled to the anchor and extending through the collagen;

~~a housing;~~

~~a wedge-shaped locking element positioned in the housing, wherein the wedge-shaped portion of the locking mechanism includes a planar surface that is arranged to engage a planar inner surface of the housing comprising a housing and at least first and second locking posts extending from the housing;~~

the locking element ~~having~~ being rotatable between a first orientation and a second orientation ~~relative to the housing;~~

in the first orientation, the locking element provides a non-tortuous pathway for the suture that is defined at least in part between the ~~planar inner surface of the housing and the planar surface of the locking element~~ first and second locking posts such that the suture can move relative to the housing; and

in the second orientation, the locking element provides a tortuous pathway for the suture that is defined at least in part between the ~~planar inner surface of the housing and the planar surface of the locking element~~ first and second locking posts such that the suture is relatively immobile relative to the housing.

39. (Previously Presented) The vascular closure assembly according to claim 38, wherein locking element has a first surface area in contact with the suture when in the first orientation and a second surface area in contact with the suture when in the second orientation.

40. (Previously Presented) The vascular closure assembly according to claim 39, wherein the first surface area is less than the second surface area.

41. (Previously Presented) The vascular closure assembly according to claim 39 wherein, the second surface area includes at least one of a textured portion, a ribbed portion, a grooved portion, a notched portion, a channeled portion, an adhesive portion, a mastic portion, and a taped portion.

42. (Currently Amended) The vascular closure assembly according to claim 38, wherein ~~at least one of the housing and the locking element~~ comprises a bio-resorbable material.

43. (Currently Amended) A vascular closure assembly, comprising:

an anchor;

a collagen;

a suture coupled to the anchor and extending through the collagen;

~~a housing;~~

~~a wedge-shaped locking element positioned in the housing, wherein the wedge-shaped portion of the locking mechanism includes a planar surface that is arranged to engage a planar inner surface of the housing~~ comprising a housing and at least first and second locking posts extending from the housing;

a channel formed in the ~~housing~~ locking element defining a suture pathway;

the locking element ~~having~~ being rotatable between a first orientation and a second orientation ~~relative to the housing;~~

in the first orientation, the channel provides a non-tortuous pathway for the suture that is defined at least in part between the ~~planar inner surface of the housing and the planar surface of the locking element~~ first and second locking posts such that the suture can move relative to the ~~housing locking element;~~ and

in the second orientation, the channel provides a tortuous pathway for the suture that is defined at least in part between the ~~planar inner surface of the housing and the planar surface of the locking element~~ first and second locking posts such that the suture is relatively immobile relative to the ~~housing locking element.~~

44. (Previously Presented) The vascular closure assembly according to claim 43, wherein the channel is straight.

45. (Previously Presented) The vascular closure assembly according to claim 44, wherein the channel comprises at least one curved portion.

46. (Previously Presented) The vascular closure assembly according to claim 43, wherein a greater surface area of the channel is in contact with the suture when in the second orientation than when in the first orientation.

47-48. (Canceled)

49. (Currently Amended) The vascular closure assembly according to claim 43, wherein ~~at least one of the housing and~~ the locking element comprises a bio-resorbable material.

50. (Currently Amended) A vascular closure assembly, comprising:

an anchor;

a collagen;

a suture coupled to the anchor and extending through the collagen;

~~an external housing;~~

~~an internal space formed by the external housing;~~

~~the internal space having at least one lower surface;~~

~~an inner housing assembly;~~

~~the inner housing assembly resides in part in the internal space;~~

~~the a inner housing assembly having a wedge shaped portion that defines at least one mating surface corresponding to the at least one lower surface, wherein the at least one mating surface includes a planar portion that is arranged to engage a planar portion of the lower surface of the external housing a housing and at least two locking posts extending from the housing; and~~

~~the inner housing assembly having being rotatable between a first position and a second position, wherein~~

~~in the first position, the inner housing assembly is suspended in the internal space such that the planar portion of the at least one mating surface does not abut the planar portion of the at least one lower surface and the suture is relatively moveable relative to the suture locking inner housing assembly in a suture space that is defined between the at least one lower surface of the external housing and the mating surface of the inner locking housing two locking posts; and~~

~~in the second position, the inner housing assembly rests on the external housing such that the planar portion of the at least one mating surface abuts the planar portion of the at least one~~

~~lower surface~~ and the suture is relatively immobile relative to the ~~suture locking~~ inner housing assembly ~~in the suture space~~.

51. (Previously Presented) The vascular closure assembly according to claim 50, wherein the inner housing assembly includes a channel through which the suture can pass.

52. (Canceled)

53. (Currently Amended) The vascular closure assembly according to claim 50, wherein expansion of the collagen provides a force that ~~tends to seat the at least one mating surface and the at least one lower surface~~ rotates the inner housing assembly.

54. (Currently Amended) The vascular closure assembly according to claim 50, wherein ~~at least one of the housing and~~ the inner housing assembly comprises a bio-resorbable material.

55. (Currently Amended) A vascular closure assembly, comprising:

an anchor;

a collagen;

a suture coupled to the anchor and extending through the collagen;

~~a housing;~~

~~the housing having a housing pathway for a suture;~~

~~a locking device having a wedge shaped portion, wherein the wedge shaped portion of the locking device includes a planar surface that is arranged to engage a planar surface of the housing;~~

~~the locking device having a plurality of mating surfaces defined by at least the planar surface of the housing and the planar surface of the locking device, and a locking device pathway for the suture;~~

~~the a locking device slidably coupled to the housing such that the locking device has at least comprising a housing and at least two locking posts extending from the housing, the locking device being rotatable between a first position and a second position relative to the housing;~~

~~in the first position, the plurality of mating surfaces provide a gap through which the suture can move relative to the suture locking assembly locking device; and~~

~~in the second position, the plurality of mating surfaces abut and grasp the suture so the suture is relatively immobile relative to the suture locking assembly locking device.~~

56-58. (Canceled)

59. (Currently Amended) The vascular closure assembly according to claim 55, wherein ~~at least one of the housing and~~ the locking device comprises a bio-resorbable material.

60-62. (Canceled)